cgmcosmos
2ry Distribution Switchgear
Up to 24 kV  IEC standards
Up to 27 kV  ANSI / IEEE standards

Reliable innovation.
Personal solutions.
Contents
I. Introduction
II. Main features
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I. Introduction

Preface

cgmcosmos

Fully gas insulated modular and compact (RMU) system

- Up to 24 kV / 630 A / 25 kA 1-3 s / 50 - 60 Hz. IEC standards
- Up to 27 kV / 600 A / 21 kA 1-3 s / 50 - 60 Hz. IEEE-ANSI standards

- Launched in 2000
- Manufactured 100% in Europe
- +350,000 units in service in +60 countries
- Application: DNS (Distribution Network Solutions for secondary distribution)

Your business and DNS applications

Segments

- Smart Grid
- Transmission & Distribution
- Generation
- Infrastructures
- Industrial
- Tertiary
- Wind
- Solar
- Dispatchable RES
II. Main features

Safety
• **Internal arc** tested AFL[R]
• All live components inside a **hermetically sealed gas tank**
• Mechanical and electrical **interlocks** to **prevent unsafe operations**

Reliability
• **Fully insulated** and **sealed** for life
• **Immersion tested** for 24 hours
• **100 % routine tested** at factory

Efficiency
• **Modular design** extensible to both sides via **ormalink**
• **Easy frontal access** to install and to test MV cables and fuses
• **Small size** and **light weight**

Sustainability
• **No SF₆** use during **installation**
• **En-of-life** management and **recycling**
• **Investment** in alternative **materials** and **own technology**

Continuous innovation
• **Smart-grid** ready system
• Updated ratings: Up to **25 kA** and **-30°C**
• **New metering** cubicles
### III. Technical details

cgmcosmos range

#### Modular cubicles

- **I**
  - Feeder function

- **p**
  - Fuse protection function

- **v**
  - Vacuum circuit breaker protection function

- **s**
  - Busbar switch function
  - Optional earthing: s-pt

- **rb**
  - Busbar rise function
  - Optional earthing: rb-pt

- **rc**
  - Cable rise function
  - Version for double cable: r2c

- **m**
  - Metering function

#### Compact cubicles

- **2lp (RMU)**
- **rlp**
- **2lv (RMU)**

#### Other options

- **2l**
- **3lp**
- **2l2p**
- **3l2p**

- Fuse protection and feeder functions
- CB protection and feeder functions

- Fuse protection, feeder and busbar rise functions
### III. Technical details

#### General ratings

<table>
<thead>
<tr>
<th><strong>cgmcosmos</strong></th>
<th>IEC</th>
<th>ANSI / IEEE</th>
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<tbody>
<tr>
<td><strong>Rated Voltage</strong></td>
<td>Ur</td>
<td>[kV]</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>15.5</td>
<td>27</td>
</tr>
<tr>
<td><strong>Rated frequency</strong></td>
<td>fr</td>
<td>[Hz]</td>
</tr>
<tr>
<td></td>
<td>50 / 60</td>
<td></td>
</tr>
<tr>
<td></td>
<td>50 / 60</td>
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</tr>
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<td><strong>Rated normal current</strong></td>
<td>Ir</td>
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<td></td>
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</tr>
<tr>
<td><strong>Busbars and cubicle interconnection</strong></td>
<td>[A]</td>
<td>400 / 630</td>
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<tr>
<td></td>
<td></td>
<td>600</td>
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<tr>
<td><strong>Feeder</strong></td>
<td>[A]</td>
<td>400 / 630</td>
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<td><strong>Output to transformer</strong></td>
<td>[A]</td>
<td>600</td>
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<td>200</td>
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<td><strong>Rated short-time withstand current</strong></td>
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<tr>
<td>with tk = 1 s – 3 s</td>
<td>lk</td>
<td>[kA]</td>
</tr>
<tr>
<td></td>
<td>16 / 21 / 25</td>
<td>21</td>
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<tr>
<td>Peak value</td>
<td>ip</td>
<td>[kA]</td>
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<tr>
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<td>40 / 52.5 / 62.5</td>
<td>52.5</td>
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<tr>
<td><strong>Rated insulation level</strong></td>
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<tr>
<td>Rated power-frequency withstand voltage [1 min]</td>
<td>Ud</td>
<td>[kV]</td>
</tr>
<tr>
<td></td>
<td>28 / 32</td>
<td>50 / 60</td>
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<td></td>
<td>35 / 60</td>
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<td>Rated lightning impulse withstand voltage</td>
<td>Up</td>
<td>[kV]</td>
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<tr>
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<td>75 / 85</td>
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<td>95 / 125</td>
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<td><strong>Internal arc classification according to IEC 62271-200 (IEE Std C37.20,7)</strong></td>
<td>IAC</td>
<td>AFL[R]</td>
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<td></td>
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<td>AFL[R] 21 / 25 kA 1 s</td>
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<td>AFL 21 kA 1 s</td>
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<td><strong>Degree of protection</strong></td>
<td>IP</td>
<td>IIP67 (Gas tank)</td>
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<td>IP3X / IP4X (enclosure)</td>
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<td><strong>Colour of equipment</strong></td>
<td>RAL</td>
<td>Grey 7035 &amp; Blue 5005</td>
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<td>LSC2</td>
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<tr>
<td><strong>Partition class</strong></td>
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<td>PM</td>
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</table>

- Other local/regional specific standards: SANS (South Africa), HN (France), GB (China)…
IV. Design characteristics

Constructive structure: Modular cubicles

- **Gas tank**
- **Busbar connection**
- **Switching devices**
- **Driving mechanism**
- **Base**
- **Cable compartment**
- **Gas relief duct**
- **Control box**

<table>
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<tr>
<th></th>
<th>Width [mm]</th>
<th>Depth [mm]</th>
<th>Height [mm]</th>
<th>Weight [kg]</th>
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<td>735</td>
<td>1300</td>
<td>90</td>
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<td>p</td>
<td>470</td>
<td>735</td>
<td>1740</td>
<td>100</td>
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<td>v</td>
<td>480</td>
<td>845</td>
<td>1740</td>
<td>240</td>
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</table>

1. **Mimic & driving mechanism cover:**
   - 1.1 Switch-disconnector
   - 1.2 Earthing-switch
2. Manometer
3. Voltage indicator (**ekor.vpis**)
4. Switch-disconnector indication
5. Acoustic alarm (**ekor.sas**)
6. Cable compartment cover
7. **ormalink**
8. Side bushings
IV. Design characteristics
Constructive structure: Compact cubicles

cgmcosmos-2lp (RMU)

cgmcosmos-2lv (RMU)

1. Gas tank
   1.a Busbar connection (if available)
   1.b Switching devices

2. Driving mechanism

3. Base
   3.a Cable compartment
   3.b Gas relief duct

4. Control box

<table>
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<th>2lv</th>
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<td>Width [mm]</td>
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<td>1050</td>
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<tr>
<td>Depth [mm]</td>
<td>735</td>
<td>820</td>
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<tr>
<td>Height [mm]</td>
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<tr>
<td>Weight [kg]</td>
<td>290</td>
<td>310</td>
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V. References

Project References

Utility
- Periodical tenders of the main worldwide utilities
- Non-stop supply to Endesa, Iberdrola, EDF, EDP, Electricity Authority of Cyprus, UTE, PLN....
- Spain: Smart-city Malaga (Endesa), STAR smart-grid (Iberdrola)
- Argentina: "Prosap" rural electrification project

End Users
- **Switzerland**: Gotthard tunnel
- **France**: Port of Brest
- **Cyprus**: Dhekelia & Larnaca desalination plants
- **Spain**: La Palma airport
- **Thailand**: Bangkok International Suvarnabhumi airport

RES
- **Portugal**: Windfloat Vestas off-shore turbines
- **Greece**: Vestas Perdikovouni on-shore windfarm
- **USA**: Red Hills on-shore wind farm
- **France**: Renault-Gestamp Solar Photovoltaic power plant
- **Mexico**: Aura PV power plant

Main countries with cubicles up to 24 kV installed:
- Spain
- France
- Cyprus
- Argentina
- Switzerland
- Turkey
- Portugal
- Brazil
- Austria
- Israel
- Poland
V. References

Solution Notes

Utility

- Villa Flandria TS (Cooperativa Eléctrica de Luján)
  - Argentina

End Users

- Gothard tunnel
  - Switzerland

- La Palma airport
  - Spain

RES

- Aura PV plant
  - Mexico

- Renault PV plant
  - France
Thank you!
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- Flyer: CA-434
- Manual: IG-078 / 182